# SERVICE MANUAL Uni-Loader 1818

8-66102

- 1. Trim along dashed line.
- 2. Slide into pocket on Binder Spine.

TYPE 1-4

SERVICE MANUAL Uni-Loader

1818

8-66102

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CASE CORPORATION
700 State Street
Racine, WI 53404 U.S.A.
CASE CANADA CORPORATION
450 Sherman Avenue
Hamilton, ON L8N 4C4 CANADA

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# 1001

# SAFETY RULES SERVICE MANUAL INTRODUCTION AND TORQUE SPECIFICATIONS

# **TABLE OF CONTENTS**

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Please click here, Then get the complete
manual



# **NOTE:**

If there is no response to click on the link above, please download the PDF document first, and then click on it.

Have any questions please write to me: admin@servicemanualperfect.com



### SAFETY RULES



Most accidents involving machine operation and maintenance can be avoided by following basic safety rules and precautions. Read and understand all the safety messages in this manual, the safety manual, and the safety signs on the machine before you operate or service the machine.

Read the operators manual and make sure you understand the operation of the machine.



Operators Manual Storage

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The safety information given in this manual does not replace safety codes, insurance needs, federal, state, and local laws.

**IMPORTANT:** Safety messages in this section point out situations which can be encountered during the normal operation and maintenance of your machine. These safety messages also give possible ways of dealing with these conditions.

Additional safety messages are used in the text of the manual to show specific safety hazards.

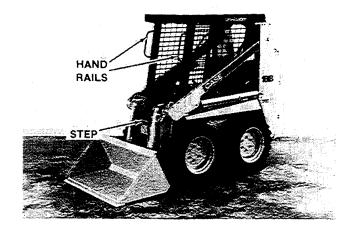


# **BEFORE OPERATION**



Do not wear loose clothing or jewelry that can catch on controls, etc. Safety shoes, heavy gloves, ear protection, etc., can also be required for your protection.

Foreign material or grease on the steps and hand rails can cause an accident. Keep the steps and hand rails clean.



Remove all loose objects from the operators area and from the machine. Loose objects can jam controls and cause accidents.

Engine exhaust fumes can cause death. If you operate this machine in an enclosed area, use good ventilation to replace the exhaust fumes with fresh air.

Make sure all persons are away from the machine before you start the engine.

Before you start the engine, always fasten the seat belt and pull down the operators protection bars.

Use hand rails and step provided. Do not rush.



# **MACHINE OPERATION**



Check all controls in a clear area and make sure the machine is operating correctly.

Do not allow another person to ride on the machine. This other person can fall or can cause an accident.

Be alert, always know the location of all workers in your area. Keep all other persons completely away from your machine. Injury or death can result if you do not follow these instructions.



# **PARKING THE MACHINE**



When you park the machine and before you leave the operators area, lower the loader bucket to the ground or support the loader lift arms with the support strut and stop the engine.



### **MAINTENANCE**



When you service the machine, put a Do Not Operate tag on the instrument panel. A Do Not Operate tag (Case part number 321-4614) is included with each new machine. Extra tags are available from your Case dealer.





Improper service or repair can cause injury or death. If you do not understand a service or adjustment procedure, see the correct section in this manual.

Unauthorized modifications to this machine can cause injury or death. Do not make unauthorized modifications to this machine.

If you must service this machine with the engine running, have another person help you. Follow the instructions in this manual. Do not leave the operators seat with the engine running.

Metal chips or debris can cause eye injury. Always wear eye or face protection when you use a hammer on this machine. Use a hammer with a soft face, such as brass, to drive hardened pins.

When adding air to a tire, always stand behind the tread of the tire and use a self-adjusting chuck. Explosive separation of the tire can result if you overinflate. When tire service is necessary, have a qualified tire mechanic service the tire.

Hydraulic fluid or grease injected into your skin can cause severe injury or death. Keep your hands and body away from any pressurized leak. If fluid is injected into your skin, see a doctor immediately and have the fluid removed.



# FIRE OR EXPLOSION PREVENTION



Engine fuel can cause an explosion or fire. Do not fill the fuel tank with the engine running, if you are near an open fire, or if you are welding, smoking, etc.

Use nonflammable cleaning solvent to clean parts.

Sparks or flame can cause the hydrogen gas in a battery to explode. To prevent an explosion, do the following:

- 1. When disconnecting the battery cables, disconnect the negative (-) cable first; when connecting the battery cables, connect the negative (-) cable last.
- 2. When connecting jumper cables to start the engine, use the procedure shown in this manual.
- 3. Do not short circuit the battery posts with metal items.

4. Do not weld, grind, or smoke near a battery.

Sparks from the electrical system or engine exhaust can cause a fire or an explosion. Before you operate this machine in an area with flammable dust or vapors, use good ventilation to remove all flammable dust or vapors.

A fire can cause injury or death. Always have a fire extinguisher near the machine. Make sure the fire extinguisher is serviced according to the manufacturers instructions.

Remove all trash or debris from the machine. Make sure that oily rags or other flammable materials are not stored on the machine.

Check for fuel, oil, and hydraulic fluid leaks. Replace worn or damaged hoses/lines. After repairs are made, clean the machine before you operate



### **BURN PREVENTION**



Battery acid causes severe burns. Batteries contain sulfuric acid. Avoid contact with skin, eyes, or clothing. Antidote - EXTERNAL: flush with water. INTERNAL: drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call a doctor immediately. EYES: flush with water for 15 minutes and get prompt medical attention.

When the battery electrolyte is frozen, the battery can explode if, (1) you try to charge the bat-

tery, (2) you try to jump start and run the engine. To prevent the battery electrolyte from freezing, try to keep the battery at full charge. If you do not follow these instructions, you or others in the area can be injured.

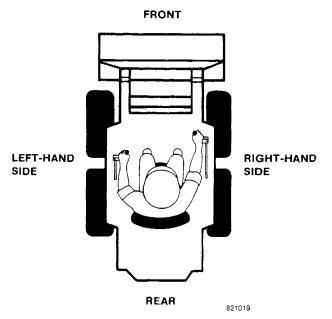
Hot coolant can spray out if the radiator cap is removed. To remove the radiator cap, let the cooling system cool, turn to the first notch, then wait until the pressure is released.

### SERVICE MANUAL INTRODUCTION

This service manual has been prepared with the latest service information available. Troubleshooting, removal, disassembly, inspection and installation procedures, and complete specifications and tightening references can be found in most sections. Some sections have drawings but no written procedure because the job is so easily done. This service manual is one of the most important tools available to the service technician.

# Right, Left, Front, and Rear

The terms right-hand and left-hand and front and rear as used in this manual indicate the right and left sides, and front and rear of the machine as seen from the operator's seat for correct operation of the machine or attachment.



### Text

If the service manual is for more than one machine or different models of components (planetary axles, gear boxes, control valves, etc.) the procedures have the steps necessary to service each model.

### **Table of Contents**

A Table of Contents is in the front of this manual. The Table of Contents shows the main divisions and the sections that are in each division. The individual sections, where necessary, have a Table of Contents on the cover or second page of that section.

# Page Numbers

All page numbers are made of two numbers the separated by a dash, such as 4002-9. The number dash before the dash is the section number. The number following is the page number in that section. Page numbers will be found at the upper right or left of each page.

### Illustrations

Illustrations are put as near as possible to the text and are to be used as part of the text.

# Special Tools

Special tools are needed to remove and install, disassemble and assemble, check, and adjust some components parts of this machine. Some special tools can be easily made locally and the necessary information to make the tool is in this service manual. Other special tools are more difficult to make locally and are available from Service Tools in the U.S. and from Jobborn Manufacturing in Canada. Use these tools according to the instructions in this service manual for your personal safety and to do the job correctly.

Order special tools from either of the following companies:

Service Tools P.O. Box 314 Owatonna, Minnesota 55060

Jobborn Manufacturing Co. 97 Frid Street Hamilton, Ontario L8P 4M3 Canada

# **TORQUE SPECIFICATIONS - DECIMAL HARDWARE**

Use the torques in this chart when special torques are not given. These torques apply to fasteners with both UNC and UNF threads as received from suppliers, dry, or when lubricated with engine oil. Not applicable if special graphites, molydisulfide greases, or other extreme pressure lubricants are used.

Grade 5 Bolts, Nuts, and Studs		
_	$\bigcirc$ $\bigcirc$ $\bigcirc$	$\preceq \rangle$
Size	Pound- Feet	Newton metres
1/4 in	9-11	12-15
5/16 in	17-21	23-28
3/8 in	35-42	48-57
7/16 in	54-64	73-87
1/2 in	80-96	109-130
9/16 in	110-132	149-179
5/8 in	150-180	203-244
3/4 in	270-324	366-439
7/8 in	400-480	542-651
1.0 in	580-696	787-944
1-1/8 in	800-880	1085-1193
1-1/4 in	1120-1240	1519-1681
1-3/8 in	1460-1680	1980-2278
1-1/2 in	1940-2200	2631-2983

Grade 8 Bolts, Nuts, and Studs		
$\langle \overline{} \rangle \langle \overline{} \rangle \langle \overline{} \rangle$		
Size	Pound- Feet	Newton
3126	reet	metres
1/4 in	12-15	16-20
5/16 in	24-29	33-39
3/8 in	45-54	61-73
7/16 in	70-84	95-114
1/2 in	110-132	149-179
9/16 in	160-192	217-260
5/8 in	220-264	298-358
3/4 in	380-456	515-618
7/8 in	600-720	814-976
1.0 in	900-1080	1220-1465
1-1/8 in	1280-1440	1736-1953
1-1/4 in	1820-2000	2468-2712
1-3/8 in	2380-2720	3227-3688
1-1/2 in	3160-3560	4285-4827
NOTE: Use thick nuts with Grade 8 bolts.		

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# **TORQUE SPECIFICATIONS - METRIC HARDWARE**

Use the following toques when special torques are not given

These values apply to fasteners with coarse threads as received from supplier, plated or unplated, or when lubricated with engine oil. These values do not apply if graphite or molydisulfide grease or oil if used.

Grade 8.8 Bolts, Nuts, and Studs $\left\langle 8.8 \right\rangle$		
Size	Pound- Feet	Newton metres
<b>M</b> 4	2-3	3-4
<b>M</b> 5	5-6	6.5-8
M6	8-9	10.5-12
M8	19-23	26-31
M10	38-45	52-61
M12	66-79	90-107
M14	106-127	144-172
M16	160-200	217-271
M20	320-380	434-515
<b>M</b> 24	500-600	675-815
M30	920-1100	1250-1500
M36	1600-1950	2175-2600

Grade 10.9 Bolts, Nuts, and Studs			
	10.9		
Size	Pound- Feet	Newton metres	
M4	3-4	4-5	
M5	7-8	9.5-11	
<b>M</b> 6	11-13	15-17 5	
M8	27-32	37-43	
M10	54-64	73-87	
M12	93-112	125-150	
M14	149-179	200-245	
M16	230-280	310-380	
M20	450-540	610-730	
<b>M</b> 24	780-940	1050-1275	
M30	1470-1770	2000-2400	
M36	2580-3090	3500-4200	

# Grade 12.9 Bolts, Nuts, and Studs



Usually the torque values specified for grade 10.9 fasteners can be used satisfactorily on grade 12.9 fasteners.

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# **TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS**

Tube OD Hose ID	Thread Size	Pound- Feet	Newton metres
37	7 Degree Fl	are Fittings	;
<b>1/4 in</b> 6.4 mm	7/16-20	6-12	8-16
<b>5/16 in</b> 7.9 mm	1/2-20	8-16	11-21
<b>3/8 in</b> 9.5 mm	9/16-18	10-25	14-33
<b>1/2 in</b> 12.7 mm	3/4-16	15-42	20-56
<b>5/8 in</b> 15.9 mm	7/8-14	25-58	34-78
<b>3/4 in</b> 19.0 mm	1-1/16-12	40-80	54-108
<b>7/8 in</b> 22.2 mm	1-3/16-12	60-100	81-135
<b>1.0 in</b> 25.4 mm	1-5/16-12	75-117	102-158
<b>1-1/4 in</b> 31.8 mm	1-5/8-12	125-165	169-223
<b>1-1/2 in</b> 38.1 mm	1-7/8-12	210-250	285-338

Tube OD Hose ID	Thread Size	Pound- Feet	Newton metres
Stra	ight Thread	ds with O-r	ing
1/4 in 6.4 mm	7/16-20	12-19	16-25
<b>5/16 in</b> 7.9 mm	1/2-20	16-25	22-23
<b>3/8 in</b> 9.5 mm	9/16-18	25-40	34-54
<b>1/2 in</b> 12.7 mm	3/4-16	42-67	57-90
<b>5/8 in</b> 15.9 mm	7/8-14	58-92	79-124
<b>3/4 in</b> 19.0 mm	1-1/16-12	80-128	108-174
<b>7/8 in</b> 22.2 mm	1-3/16-12	100-160	136-216
<b>1.0 in</b> 25.4 mm	1-5/16-12	117-187	159-253
<b>1-1/4 in</b> 31 8 mm	1-5/8-12	165-264	224-357
<b>1-1/2 in</b> 38.1 mm	1-7/8-12	250-400	339-542

Split Flange Mounting Bolts		
Size	Pound- Feet	Newton metres
5/16-18	15-20	20-27
3/8-16	20-25	26-33
7/16-14	35-45	47-61
1/2-13	55-65	74-88
5/8-11	140-150	190-203

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# Section 1002

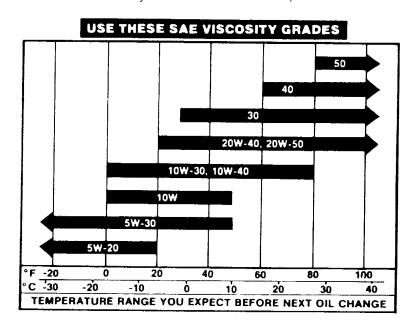
**FLUIDS AND LUBRICANTS** 

# CAPACITIES AND LUBRICANTS

Fuel Tank Capacity	
•	, , , , , , , , , , , , , , , , , , , ,
Diesel Engine Crankcase  Capacity - with filter change	
Type of oil	See Engine Oil Recommendations on page 3
Gasoline Engine Crankcase Capacity - with filter change	2.3 U.S. quarts (2.2 litres)
Type of oil	See Engine Oil Recommendations on page 3
Hydraulic Reservoir Capacity - with filter change	
Capacity - without filter change	
Capacity - total system	
Type of oil	SAE 10W30 engine oil with additive, see below
When you change the hydraulic oil, add one U.S. quart (tive) Case part number B17508.	(0.95 litre) of Case HTO (Hydrostatic Transmission Oil Addi-
When you add oil to the hydraulic reservoir between oil ol ditive. Mix one U.S. quart (0.95 litre) of HTO additive with fiv	hanges, use a mixture of SAE 10W30 engine oil and HTO ad- re U.S. gallons (19 litres) of 10W30 engine oil. (20 to 1 ratio).
Drive Chain Compartments Capacity - each side	
Type of oil	
Engine Cooling System (Diesel) Capacity	
	Ethylene glycol type antifreeze and water that is mixed for lowest ambient temperature at least 50/50 mix
Grease Fittings Type of lubricant	Case IH molydisulfide grease
Hydrostatic Motor Shaft Spline Type of lubricant	Molykote, Type G grease

# GASOLINE ENGINE OIL RECOMMENDATIONS

Use Case IH Engine Oil of the correct viscosity. See the chart for the temperatures and the recommended viscosity.



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# DIESEL ENGINE OIL RECOMMENDATIONS

Use Case IH Engine Oil of the correct viscosity. See the chart for the temperatures and the recommended viscosity.

Above 77°F (25°C)	SAE 30
32 to 77°F (0 to 25°C)	SAE 10W30
Below 32°F (0°C)	SAE 10W or SAE 10W30

### **FUEL**

# Gasoline Engines

Use clean, unleaded regular grade gasoline. Do not use leaded gasoline in the engine.

# **Diesel Engines**

Use the diesel fuel recommended for the temperatures in your area. If the ambient temperature lowers to the "cloud point" of the fuel, wax particles will form in the fuel. The wax particles can cause a restriction in the fuel filters decreasing engine power. See your fuel dealer.

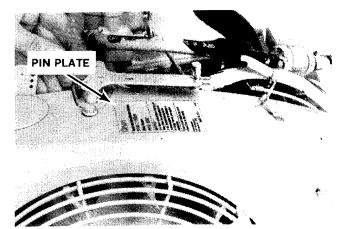
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# Section 1010

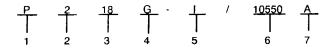
**ENGINE SPECIFICATIONS** 

For Onan P218
2 Cylinder Gasoline Engine

# **ENGINE IDENTIFICATION**



How to interpret MODEL and SPEC NO.



- 1. Factory code for general identification of basic engine series
- 2. Number of cylinders
- 3. BHP rating
- 4. Fuel required (G = gasoline)
- 5. Engine duty cycle
- 6. Factory code for designated optional equipment, if any.
- Specification (spec letter) which advances with factory production modifications.

A PIN (Product Identification Number) plate is fastened to the top of the flywheel guard. The bottom number on the plate is the serial number for the engine. Always use both numbers when ordering service parts or when making service enquiries.

# **GENERAL SPECIFICATIONS**

Type Horizontal Air Cooled 4-Cycle Gasoline Engine	
Number of Cylinders	70
Stroke	73 mm
Total Displacement	782 cm <sup>3</sup>
Cylinder Compression	517 to 793 kPa
Ignition Order Both Together	
Direction Of Rotation	
Governor Mechanical On End Of Camshaft	

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Valve Clearance (Cold)	
Intake	0.13 mm
Exhaust 0.013 inch	0.33 mm
Intake Valve	
Stem Diameter	7.099 to 7.112 mm
Clearance (Stem to Guide) 0.0010 to 0.0025 inch	0.025 to 0.064 mm
Valve Face Angle44°	0.020 10 0.00 1 11111
Intake Valve Seat	
Seat Diameter	36.56 to 36.59 mm
Seat Outside Diameter	37.34 to 37.36 mm
Valve Seat Width	0.787 to 1.194 mm
Valve Seat Width	0.787 to 1.194 mm
Exhaust Valva	
Stem Diameter	7.061 to 7.074 mm
Clearance (Stem to Guide) 0.0020 to 0.0035 inch	0.051 to 0.089 mm
Valve Face Angle44°	
Exhaust Valve Seat	
Seat Diameter	30.20 to 30.23 mm
Seat Outside Diameter	30.28 to 30.30 mm
Valve Seat Width	0.787 to 1.194 mm
Valve Seat Angle45°	
Valve Guide	
Intake Inside Diameter 0.281 to 0.282 inch	7.137 to 7.163 mm
Exhaust Inside Diameter 0.2805 to 0.2815 inch	7.124 to 7.150 mm
Valve Springs Intake And Exhaust	
Valve Spring Free Length (Approx.)	40.64 mm
Valve Spring Length	10.04
Valve Open	26.80 mm
Valve Closed	34.19 mm
Spring Load At 1.35 inch (Valve Closed)	11.3 kg
Spring Load At 1.05 inch (Valve Open)	24.9 kg
Camshaft	
Journal Diameter	34.90 to 34.91 mm
Bearing Clearance	0.038 to 0.076 mm
9	
End Play 0.0110 to 0.0480 inch	0.280 to 1.22 mm
Cam Lobe Lift	
Intake	6.98 mm
Exhaust	7.49 mm
Camshaft Gear	
Backlash	0.025 to 0.127 mm
Gear Backlash	
Timing Gear 0.001 to 0.005 inch	0.025 to 0.127 mm
Tappet	
Body Diameter	18.99 to 19.00 mm
Bore Diameter	19.05 to 19.09 mm
Clearance In Bore	0.051 to 0.102 mm
Circulation in Dole 1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	0.001 10 0.102 111111

Cylinder Liners	
Standard Bore	82.53 to 82.55 mm
Oversize Bore	+ 0.127 mm
+ 0.010 inch	+ 0.254 mm
+ 0.020 inch	+ 0.508 mm
+ 0.030 inch	+ 0.762 mm
+ 0.040 inch	+ 1.016 mm
Maximum Out Of Round	0.08 mm
Maximum Taper	0.00 mm
Cross Hatch Pattern	0.13 11111
- ·	
Surface Finish	
Piston Rings	
Ring Gap In Liner:	
Top Compression	0.250 to 0.510 mm
Bottom Compression 0.010 to 0.020 inch	0.250 to 0.510 mm
Oil Control	0.250 to 0.510 mm
Side Clearance In Top Groove 0.003 to 0.008 inch	0.076 to 0.203 mm
Oversize Rings See Oversize Pistons	
Pistons	
Clearance In Liner	0.084 to 0.135 mm
Piston Pin Bore	17.47 to 17.48 mm
Ring Groove Width:	
Top Compression Ring 0.080 to 0.081 inch	2.032 to 2.057 mm
Bottom Compression Ring 0.080 to 0.081 inch	2.032 to 2.057 mm
Oil Control Ring 0.189 inch	4.775 to 4.801 mm
Available Oversizes+ 0.005 inch	+ 0.127 mm
+ 0.010 inch	+ 0.254 mm
+ 0.020 inch	+ 0.508 mm
+ 0.030 inch	+ 0.762 mm
+ 0.040 inch	+ 1.016 mm
Distan Dina	
Piston Pins Diameter	17.463 to 17.468 mm
Clearance In Piston	0.001 to 0.0162 mm
<del></del>	
Clearance In Connecting Rod 0.0002 to 0.0007 inch	0.005 to 0.018 mm
Connecting Rods	
Big End Bore (Bolts Torqued)	41.35 to 41.36 mm
Side Clearance On Crankshaft 0.002 to 0.016 inch	0.051 to 0.406 mm
Piston Pin Bore	17.47 to 17.48 mm
Big End To Crankshaft Clearance 0.0020 to 0.0033 inch	0.051 to 0.084 mm
Available Oversizes	+ 0.254 mm
+ 0.020 inch	+ 0.508 mm
+ 0.030 inch	+ 0.762 mm
. 0.000 inch	0.702 11111

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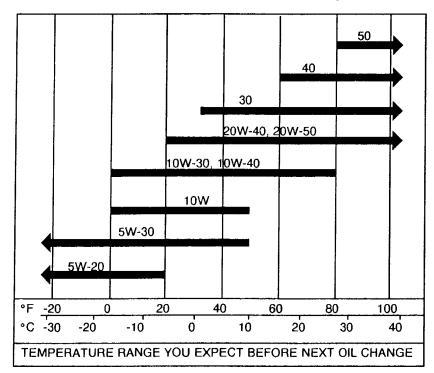
### Crankshaft

Main Bearing Journal Diameter	1.9992 to 2.0000 inch	50.78 to 50.80 mm
Main Bearing Clearance	0.0024 to 0.0042 inch	0.061 to 0.107 mm
Connecting Rod Journal Diameter	1.6252 to 1.6260 inch	41.28 to 41.30 mm
Connecting Rod Bearing Clearance	0.0020 to 0.0033 inch	0.051 to 0.084 mm
Main Bearing Journal Taper (Max)	0.001 inch	0.03 mm
Connecting Rod Bearing Journal Taper (Max)	0.001 inch	0.03 mm
Crankshaft Gear Installation Temperature	350°F	177°C
Starter Ring Gear Installation Temperature		204°C
Crankshaft End Play	0.006 to 0.012 inch	0.15 to 0.30 mm
Lubricant		
Canacity	1.5 Quarts	1 4   ltro

### L

1.4 Lltre Change Period ..... Every 25 Hours Grade . . . . . . . . . . See Table Below

### USE THESE SAE VISCOSITY GRADES



### Oil Strainer

Location	 	In Oil Pan
Cleaning Period	 	Every 100 Hours

### **Oil Relief Valves**

Location	One In Engine Block	
	One In Oil Filter Adaptor	
Open At (Both)		138 kPa
Valve Diameter (Both)	0.3105 to 3.125 inch	7.89 to 7.94 mm
Valve Spring (Both)		
Free Length	1.00 inch	25.4 mm
Compress To	0.50 inch	12.7 mm
With A Load Of		10.7 to 12.5 N

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Low Oil Pressure Switch	
Location On Oil Filter Adaptor Block	
Operation Stops Voltage Flow To Ignition	
When Oil Pressure Is Below 8 PSI	55 kPa
Engine Block Breather	
Location	
Cleaning Period Every 200 Hours	
Oil Pump	
Location At Front Of Engine Inside	
Timing Cover	
Drive Gear In Mesh With Crankshaft Gear	_
Gear Backlash 0.001 to 0.008 inch	0.025 to 0.203 mm
Minimum Pressure at 1500 RPM	55 kPa
Shim Gasket Thickness	0.127 mm
0.007 inch	0.178 mm
0.009 inch	0.229 mm
Ignition System	
Type Electronic Battery Ignition	
System Using An Ignition Module	
And Trigger Ring	
Location	
Crankshalt And Timing Gear Cover	
Ignition Coil	
Primary Coil Resistance 2.90 to 3.60 Ohms At 70°F	
Secondary Coil Resistance 14.5 to 19.8k Ohms At (21°C)	
Ignition Timing	
Degress Before Top Center	
Spark Plug	
Type	
Electrode Gap	1.64 mm
Carburetor	
Type Fixed Power Jet With	
Adjustable Low Idle Needle	
Governor	
Type Throwout Balls In Cup On	
End Of Camshaft. Actuates On	
Throttle Control Lever	
Fuel Pump	
Type Diaphragm Operated By	
Vacuum In Engine Block	
Inlet Vacuum (Min)	
Low Idle Speed	0.767 kPa at 0°C
Maximum Speed	0.767 kPa at 0°C
Outlet Pressure (Min)	
Low Idle Speed	11.72 kPa
Maximum Speed	11.72 kPa

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